

In the claims:

1. (Currently Amended) An on-demand service expanding system ~~mounted~~ connectable to a system provided with a server supplying a variety of services including a connection service with a communication network, a ~~number~~ plurality of clients each receiving said variety of services, a ~~number~~ plurality of front-ends each interposed between said plurality of clients and said server and executing a part of said variety of services of service providing function involved in said server based on a demand from each of said plurality of clients, and service expanding equipment ~~containing connectable to internally~~ a communication base, said on-demand service expanding system comprising:

~~said on-demand service expanding system containing~~ at least one service broker ~~residing on each communication device being a component of the communication network~~, and at least one broker controller ~~residing on each computer for supplying a variety of services~~;

said service broker being provided with a means for selecting a front-end among said plurality of front ends that matches with a demand of service transmitted from a one client among said plurality of clients, ~~said selected~~ and a front-end connected with to said one client to transmit contents of the demand of service with respect to the selected front-end; and

said broker controller being provided with a means for controlling the selected front-end ~~selected~~ so as to connect the ~~same~~ selected front end with said server, and a means for controlling said server ~~connected by means of the former control means~~, said selected front-end, and the service broker from which said contents of the demand of service was transmitted for a period of time during provision of the service.

1 2. (Currently Amended) An on-demand service expanding system ~~mounted~~
2 connectable to a system provided with a server and a plurality of front ends, said

3 plurality of front ends interposed between a plurality of clients ~~each front-end~~
4 ~~interposed between a server~~ for supplying a variety of services to said plurality of
5 clients ~~and a client by which the variety of services are to be received, and a said~~
6 service expanding system for providing services by the use of said plurality of front
7 ends ~~front-end~~, said services being implemented by an entrepreneur which includes
8 ~~existing on~~ computers in a communication network composed of communication
9 devices and the computers, said entrepreneur ~~and for~~ providing the variety of services
10 with respect to customers by the use of said communication network ~~(hereinafter~~
11 ~~referred to simply as "entrepreneur")~~, said plurality of front ends ~~front-end~~ at least
12 partially ~~executing a part of~~ functions for processing data of the server on at least one
13 of said a communication devices, ~~device acting therefor~~, comprising:

14 service brokers and broker controllers;

15 each service broker being provided with:

16 a means for transferring a demand for using a service ~~implemented to each~~
17 ~~front-end that corresponds to the one~~ transmitted from each client and each front-end to
18 a pertinent front-end,

19 a means for transmitting said a demand for controlling the pertinent front-end to
20 said broker controller,

21 a means for administering front-end information being information as to a front-
22 end in a communication device on which the service broker ~~oneself~~ resides and
23 containing information of an interface mounted to a front-end for connecting a client,
24 the server, and the service broker with the front-end, a name of a service implemented
25 by ~~to~~ the front-end, and information of the communication device on which the front-
26 end resides, and

27 a means for providing a service broker functional interface which includes an
28 interface by which a group of said respective means are used from the broker
29 controller, the front-ends, and the clients ~~(hereinafter referred to as "service broker~~
30 ~~functional interface")~~; and

31 said broker controller residing on a computer that supplies services and being
32 provided with:

33 a-means for administering a program included on each front-end or the server,
34 a-means for controlling each front-end operated on each communication device,
35 a-means for controlling the server operated on each computer,
36 a-means for controlling the service broker residing on each communication
37 device;

38 a-means for administering service administering information, and
39 a-means for providing an interface by which a group of said means are used
40 from the service brokers, the server, and the entrepreneurs;

41 said service administering information containing an identifier allocated by
42 each broker controller ~~oneself so as to be alone in the broker controller oneself~~ in
43 order that a program is discriminated by the broker controller ~~oneself~~, a name of
44 service that can be realized by using programs in the server and each front-end,
45 program information being information as to the programs including the server and
46 each front-end, information of an interface for connecting each front-end and each
47 broker controller ~~oneself~~ with the server, server information involving a name of
48 service implemented to the server and being information as to the server installed by
49 each entrepreneur, information of the service broker functional interface for
50 connecting each broker controller ~~oneself~~ with a service broker residing on each
51 communication device, information of a communication device on which each service
52 broker resides, and a system information involving an interface for using a control
53 function of each front-end provided by said service expanding system and being
54 information as to the on-demand service expanding system ~~oneself~~.

1 3. (Currently Amended) An on-demand service expanding system as claimed in
2 claim 2, wherein when a given front-end providing a service that is requested by a
3 given client to use the ~~same~~ given front end does not reside on a communication device

4 located in the nearest service broker with which the given client has been connected,
5 said service broker transmits a distribution of and a demand for starting up the given
6 front-end ~~in question~~ to said broker controller, whereby a connecting point of the given
7 client with service is distributed in an on-demand manner to the nearest communication
8 device.

1 4. (Original) A service providing system of a service-contents preliminary
2 delivery type applied to the on-demand service expanding system as claimed in claim
3 2, comprising:

4 said client, said front-end, said server, said service-expanding system, and said
5 on-demand service expanding system;

6 said server being provided with a service forecasting means for extracting
7 service contents that are forecasted to be used by said client; and

8 said front-end being provided with a means for receiving from the server service
9 contents that are forecasted to be used by a client and maintaining the same to provide
10 the service contents received with respect to the client in question.

1 5. (Original) A service providing system of a service-contents preliminary
2 delivery type as claimed in claim 4, comprising:

3 a means wherein the service broker transmits such a demand that the server
4 extracts service contents that are forecasted to be used by a client in a parallel manner
5 during a period of time in which the client checks or establishes newly a front-end to
6 be connected with the client at the time when the client connected with the service
7 broker, and transfers the service contents extracted to the front-end in question with
8 respect to the server from which a service to be received by the client is supplied
9 through the broker controller, whereby the service contents that are forecasted to be
10 used by the client have been already present in the front-end in question at the time
11 when the client transmits a demand for use of service to the front-end in question.

6. (Previously Presented) A service providing system of a service-contents preliminary delivery type as claimed in claim 4, wherein:

said service-forecasting means involves a means for maintaining an access history with respect to Web pages by a client, and forecasting a service, which will be used by the client from the history.

7. (Previously Presented) A service providing system of a service-contents preliminary delivery type as claimed in claim 4, wherein:

said service forecasting means involves a means for selecting e-mails that have been addressed to the client based on an identifier delivered from said broker controller.

8. (Currently Amended) A ~~method~~system for providing services involving a communication network provider, service providers, and customers, comprising:

said communication network provider constructing and operating a communication network by the use of communication equipment and computers in which the on-demand service expanding system as claimed in claim 2 has been installed to provide a connection service with the communication network operated by the communication network provider ~~oneself~~ with respect to the customers, ~~whereby~~wherein an environment making possible to provide services to the customers by the use of the on-demand service expanding system residing on the communication network constructed by the communication network provider ~~oneself~~ (hereinafter referred to as "service providing environment") is supplied to a plurality of the service providers, so that use fees for the service providing environment in response to use fees for resources of the communication equipment in addition to

communication fees for the communication network operated by the communication network provider ~~oneself~~ are collected from the plurality of service providers; and

said service providers constructing servers and front-ends in which services to be provided to customers have been installed in the service providing environment supplied from said communication network provider to distribute clients to the customers thereby to provide services with respect to the customers, and determining use fees of a service to be supplied to the customers from the service providers themselves with taking fees to be paid to the communication network provider into consideration, and collecting the fees determined from each customer who makes an agreement with the service providers in use of services.

9. (Currently Amended) A storage medium, storing a program for use in an on-demand service expanding system connectable to a system provided with a server supplying a variety of services including a connection service with a communication network, a plurality of clients each receiving said variety of services, a plurality of front-ends interposed between said plurality of clients and said server and executing a part of said variety of services of said server based on a demand from each of said plurality of clients, and service expanding equipment connectable to a communication base, said on-demand service expanding system comprising:

at least one service broker, and at least one broker controller;

said service broker being provided with a means for selecting a front-end among said plurality of front ends that matches a demand of service transmitted from one client among said plurality of clients, said selected front-end connected to said one client to transmit contents of the demand of service with respect to the selected front-end; and

said broker controller being provided with a means for controlling the selected front-end so as to connect the selected front end with said server, and a means for controlling said server, said selected front-end, and the service broker from which said contents of the demand of service was transmitted for a period of time during provision of the service.

comprising:

said a program permitting realization of the on-demand service expanding system ~~by which the on-demand service expanding system as claimed in claim 1 is realized as a result of executing installing the program in computers or communication devices contained in a communication network being stored in said storage medium.~~

10. (Previously Presented) A service providing system of a service-contents preliminary delivery type as claimed in claim 5, wherein:

said service-forecasting means involves a means for maintaining an access history with respect to Web pages by a client, and forecasting a service, which will be used by the client from the history.

11. (Previously Presented) A service providing system of a service-contents preliminary delivery type as claimed in claim 5, wherein:

said service forecasting means involves a means for selecting e-mails that have been addressed to the client based on an identifier delivered from said broker controller.

12. (Currently Amended) A ~~method~~ system for providing services involving a communication network provider, service providers, and customers, comprising:

said communication network provider constructing and operating a communication network by the use of communication equipment and computers in which the

service providing system of a service-contents preliminary delivery type as claimed in claim 3 has been installed to provide a connection service with the communication network operated by the communication network provider ~~oneself~~ with respect to the customers, whereby an environment making possible to provide services to the customers by the use of the on-demand service expanding system residing on the communication network constructed by the communication network provider ~~oneself~~ (hereinafter referred to as “service providing environment”) is supplied to a plurality of the service providers, so that use fees for the service providing environment in response to use fees for resources of the communication equipment in addition to communication fees for the communication network operated by the communication network provider ~~oneself~~ are collected from the plurality of service providers; and

said service providers constructing servers and front-ends in which services to be provided to customers have been installed in the service providing environment supplied from said communication network provider to distribute clients to the customers thereby to provide services with respect to the customers, and determining use fees of a service to be supplied to the customers from the service providers themselves with taking fees to be paid to the communication network provider into consideration, and collecting the fees determined from each customer who makes an agreement with the service providers in use of services.

13. (Currently Amended) A ~~method~~ system for providing services involving a communication network provider, service providers, and customers, comprising:
said communication network provider constructing and operating a communication network by the use of communication equipment and computers in which the

service providing system of a service-contents preliminary delivery type as claimed in claim 4 has been installed to provide a connection service with the communication network operated by the communication network provider ~~oneself~~ with respect to the customers, whereby an environment making possible to provide services to the customers by the use of the on-demand service expanding system residing on the communication network constructed by the communication network provider ~~oneself~~ (hereinafter referred to as “service providing environment”) is supplied to a plurality of the service providers, so that use fees for the service providing environment in response to use fees for resources of the communication equipment in addition to communication fees for the communication network operated by the communication network provider ~~oneself~~ are collected from the plurality of service providers; and

said service providers constructing servers and front-ends in which services to be provided to customers have been installed in the service providing environment supplied from said communication network provider to distribute clients to the customers thereby to provide services with respect to the customers, and determining use fees of a service to be supplied to the customers from the service providers themselves with taking fees to be paid to the communication network provider into consideration, and collecting the fees determined from each customer who makes an agreement with the service providers in use of services.

14. (Currently Amended) A ~~method~~ system for providing services involving a communication network provider, service providers, and customers, comprising:

said communication network provider constructing and operating a communication network by the use of communication equipment and computers in which the

service providing system of a service-contents preliminary delivery type as claimed in claim 5 has been installed to provide a connection service with the communication network operated by the communication network provider ~~oneself~~ with respect to the customers, whereby an environment making possible to provide services to the customers by the use of the on-demand service expanding system residing on the communication network constructed by the communication network provider ~~oneself~~ (hereinafter referred to as “service providing environment”) is supplied to a plurality of the service providers, so that use fees for the service providing environment in response to use fees for resources of the communication equipment in addition to communication fees for the communication network operated by the communication network provider ~~oneself~~ are collected from the plurality of service providers; and

said service providers constructing servers and front-ends in which services to be provided to customers have been installed in the service providing environment supplied from said communication network provider to distribute clients to the customers thereby to provide services with respect to the customers, and determining use fees of a service to be supplied to the customers from the service providers themselves with taking fees to be paid to the communication network provider into consideration, and collecting the fees determined from each customer who makes an agreement with the service providers in use of services.

15. (Currently Amended) A ~~method~~ system for providing services involving a communication network provider, service providers, and customers, comprising:

said communication network provider constructing and operating a communication network by the use of communication equipment and computers in which the

service providing system of a service-contents preliminary delivery type as claimed in claim 6 has been installed to provide a connection service with the communication network operated by the communication network provider ~~oneself~~ with respect to the customers, whereby an environment making possible to provide services to the customers by the use of the on-demand service expanding system residing on the communication network constructed by the communication network provider ~~oneself~~ (hereinafter referred to as “service providing environment”) is supplied to a plurality of the service providers, so that use fees for the service providing environment in response to use fees for resources of the communication equipment in addition to communication fees for the communication network operated by the communication network provider ~~oneself~~ are collected from the plurality of service providers; and

said service providers constructing servers and front-ends in which services to be provided to customers have been installed in the service providing environment supplied from said communication network provider to distribute clients to the customers thereby to provide services with respect to the customers, and determining use fees of a service to be supplied to the customers from the service providers themselves with taking fees to be paid to the communication network provider into consideration, and collecting the fees determined from each customer who makes an agreement with the service providers in use of services.

16. (Currently Amended) A ~~method~~system for providing services involving a communication network provider, service providers, and customers, comprising:

said communication network provider constructing and operating a communication network by the use of communication equipment and computers in which the

service providing system of a service-contents preliminary delivery type as claimed in claim 7 has been installed to provide a connection service with the communication network operated by the communication network provider ~~oneself~~ with respect to the customers, whereby an environment making possible to provide services to the customers by the use of the on-demand service expanding system residing on the communication network constructed by the communication network provider ~~oneself~~ (hereinafter referred to as “service providing environment”) is supplied to a plurality of the service providers, so that use fees for the service providing environment in response to use fees for resources of the communication equipment in addition to communication fees for the communication network operated by the communication network provider ~~oneself~~ are collected from the plurality of service providers; and

said service providers constructing servers and front-ends in which services to be provided to customers have been installed in the service providing environment supplied from said communication network provider to distribute clients to the customers thereby to provide services with respect to the customers, and determining use fees of a service to be supplied to the customers from the service providers themselves with taking fees to be paid to the communication network provider into consideration, and collecting the fees determined from each customer who makes an agreement with the service providers in use of services.

17. (Currently Amended) A ~~method~~ system for providing services involving a communication network provider, service providers, and customers, comprising:

said communication network provider constructing and operating a communication network by the use of communication equipment and computers in which the

service providing system of a service-contents preliminary delivery type as claimed in claim 10 has been installed to provide a connection service with the communication network operated by the communication network provider ~~oneself~~ with respect to the customers, whereby an environment making possible to provide services to the customers by the use of the on-demand service expanding system residing on the communication network constructed by the communication network provider ~~oneself~~ (hereinafter referred to as “service providing environment”) is supplied to a plurality of the service providers, so that use fees for the service providing environment in response to use fees for resources of the communication equipment in addition to communication fees for the communication network operated by the communication network provider ~~oneself~~ are collected from the plurality of service providers; and

said service providers constructing servers and front-ends in which services to be provided to customers have been installed in the service providing environment supplied from said communication network provider to distribute clients to the customers thereby to provide services with respect to the customers, and determining use fees of a service to be supplied to the customers from the service providers themselves with taking fees to be paid to the communication network provider into consideration, and collecting the fees determined from each customer who makes an agreement with the service providers in use of services.

18. (Currently Amended) A ~~method~~system for providing services involving a communication network provider, service providers, and customers, comprising:

said communication network provider constructing and operating a communication network by the use of communication equipment and computers in which the

service providing system of a service-contents preliminary delivery type as claimed in claim 11 has been installed to provide a connection service with the communication network operated by the communication network provider ~~oneself~~ with respect to the customers, whereby an environment making possible to provide services to the customers by the use of the on-demand service expanding system residing on the communication network constructed by the communication network provider ~~oneself~~ (hereinafter referred to as “service providing environment”) is supplied to a plurality of the service providers, so that use fees for the service providing environment in response to use fees for resources of the communication equipment in addition to communication fees for the communication network operated by the communication network provider ~~oneself~~ are collected from the plurality of service providers; and

said service providers constructing servers and front-ends in which services to be provided to customers have been installed in the service providing environment supplied from said communication network provider to distribute clients to the customers thereby to provide services with respect to the customers, and determining use fees of a service to be supplied to the customers from the service providers themselves with taking fees to be paid to the communication network provider into consideration, and collecting the fees determined from each customer who makes an agreement with the service providers in use of services.

19. (Currently Amended) A storage medium storing a program for use in an on-demand service expanding system connectable to a system provided with a server and a plurality of front ends, said plurality of front ends interposed between a plurality of clients for supplying a variety of services to said plurality of clients, said service expanding system

providing services by the use of said plurality of front ends, said services being implemented by an entrepreneur which includes computers in a communication network composed of communication devices and the computers, said entrepreneur providing the variety of services with respect to customers by the use of said communication network, said plurality of front ends end at least partially executing functions for processing data of the server on at least one of said communication devices, comprising:

service brokers and broker controllers;

each service broker being provided with:

means for transferring a demand for using a service transmitted from each client and each front-end to a pertinent front-end,

means for transmitting said demand for controlling the pertinent front-end to said broker controller,

means for administering front-end information being information as to a front-end in a communication device on which the service broker resides and containing information of an interface mounted to a front-end for connecting a client, the server, and the service broker with the front-end, a name of a service implemented by the front-end, and information of the communication device on which the front-end resides, and

means for providing a service broker functional interface which includes an interface by which a group of said respective means are used from the broker controller, the front-ends, and the clients; and

said broker controller residing on a computer that supplies services and being provided with:

means for administering a program included on each front-end or the server,

means for controlling each front-end operated on each communication device,

means for controlling the server operated on each computer,

means for controlling the service broker residing on each communication device;

means for administering service administering information, and

means for providing an interface by which a group of said means are used from the service brokers, the server, and the entrepreneurs;

said service administering information containing an identifier allocated by each broker controller in order that a program is discriminated by the broker controller, a name of service that can be realized by using programs in the server and each front-end, program information being information as to the programs including the server and each front-end, information of an interface for connecting each front-end and each broker controller with the server, server information involving a name of service implemented to the server and being information as to the server installed by each entrepreneur, information of the service broker functional interface for connecting each broker controller with a service broker residing on each communication device, information of a communication device on which each service broker resides, and a system information involving an interface for using a control function of each front-end provided by said service expanding system and being information as to the on-demand service expanding system, comprising:

a said program permitting realization of by which the on-demand service expanding system as claimed in claim 2 is realized as a result of installing the

program in at least one of said computers or at least one of said communication devices contained in a said communication network being stored in said storage medium.

20. (Currently Amended) A storage medium storing a program as recited in claim 19 and wherein said on-demand service expanding system further comprises:
comprising:

~~———— a program by which the on-demand service expanding system as~~
~~claimed in claim 3 is realized as a result of installing the program in computers or~~
~~communication devices contained in a communication network being stored in said storage~~
~~medium when a given front-end providing a service that is requested by a given client to use~~
~~the given front end does not reside on a communication device located in the nearest service~~
~~broker with which the given client has been connected, said service broker transmits a~~
~~distribution of and a demand for starting up the given front-end to said broker controller,~~
~~whereby a connecting point of the given client with service is distributed in an on-demand~~
~~manner to the nearest communication device.~~

21. (Currently Amended) A storage medium storing a program as recited in claim 19 wherein said on-demand service expanding system further comprises:
comprising:

~~———— a program by which a service providing system of a service contents~~
~~preliminary delivery type as claimed in claim 4 is realized as a result of installing the~~
~~program in computers or communication devices contained in a communication network~~
~~being stored in said storage medium said client, said front-end, said server, said service-~~
~~expanding system, and said on-demand service expanding system;~~

_____ said server being provided with a service forecasting means for extracting service contents that are forecasted to be used by said client; and

_____ said front-end being provided with a means for receiving from the server service contents that are forecasted to be used by a client and maintaining the same to provide the service contents received with respect to the client in question.

22. (Currently Amended) A storage medium storing a program as recited in claim 21 wherein said on-demand service expanding system further comprises;
comprising:

a program by which a service providing system of a service contents preliminary delivery type as claimed in claim 5 is realized as a result of installing the program in computers or communication devices contained in a communication network being stored in said storage medium a means wherein the service broker transmits such a demand that the server extracts service contents that are forecasted to be used by a client in a parallel manner during a period of time in which the client checks or establishes newly a front-end to be connected with the client at the time when the client connected with the service broker, and transfers the service contents extracted to the front-end in question with respect to the server from which a service to be received by the client is supplied through the broker controller, whereby the service contents that are forecasted to be used by the client have been already present in the front-end in question at the time when the client transmits a demand for use of service to the front-end in question.

23. (Currently Amended) A storage medium storing a program as recited in claim 21 wherein said on-demand service expanding system further comprises;
comprising:

~~———— a program by which a service providing system of a service contents preliminary delivery type as claimed in claim 6 is realized as a result of installing the program in computers or communication devices contained in a communication network being stored in said storage medium~~ said service-forecasting means involves a means for maintaining an access history with respect to Web pages by a client, and forecasting a service, which will be used by the client from the history.

24. (Currently Amended) A storage medium storing a program as recited in claim 21 wherein said on-demand service expanding system further comprises;
comprising:

~~———— a program by which a service providing system of a service contents preliminary delivery type as claimed in claim 7 is realized as a result of installing the program in computers or communication devices contained in a communication network being stored in said storage medium~~ said service forecasting means involves a means for selecting e-mails that have been addressed to the client based on an identifier delivered from said broker controller.

25. (Currently Amended) A storage medium storing a program as recited in claim 19 wherein said on-demand service expanding system further comprises,
comprising:

~~———— a program by which a service providing system of a service contents preliminary delivery type as claimed in claim 8 is realized as a result of installing the~~

~~program in computers or communication devices contained in a communication network~~
~~being stored in said storage medium~~ wherein an environment making possible to provide
services to the customers by the use of the on-demand service expanding system residing on
the communication network constructed by the communication network provider (hereinafter
referred to as “service providing environment”) is supplied to a plurality of the service
providers, so that use fees for the service providing environment in response to use fees for
resources of the communication equipment in addition to communication fees for the
communication network operated by the communication network provider are collected from
the plurality of service providers; and

_____ said service providers constructing servers and front-ends in which
services to be provided to customers have been installed in the service providing environment
supplied from said communication network provider to distribute clients to the customers
thereby to provide services with respect to the customers, and determining use fees of a
service to be supplied to the customers from the service providers themselves with taking fees
to be paid to the communication network provider into consideration, and collecting the fees
determined from each customer who makes an agreement with the service providers in use of
services.